Literacy Design Collaborative

Pesticides: Blessing, Curse, or Both? (A Close Reading LDC Module)

by Gary McCormick and Susan Weston

The 1948 Nobel Prize in Medicine went to Paul Müller, who discovered DDT's power as a persistent insecticide that could greatly reduce typhus epidemics and other hazards. The Nobel presentation speech makes the case for DDT's value, and selections from Rachel Carson's "Silent Spring" offer evidence of DDT's hazards. Students wrestle the question of whether the chemical did indeed deserve the honor it received. Main steps of the learning process include:

- A close reading process that probes the Nobel speech.
- An task engagement process to set up the main teaching task
- A research reading process that studies Carson's evidence for each of her claims.
- A transition to writing in which students connect Carson's evidence to an "informed reading" of the Nobel speech's claims.
- A writing process in which students establish and support a claim about whether the pesticide discovery deserved the prize.

This module is one of three prototypes for combining the LDC framework with an approach to close reading shown in instructional exemplars created by Student Achievement Partners.

We'd love to hear questions and thoughts on this module: please e-mail spweston@gmail.com.

GRADES	DISCIPLINE	COURSE
7 - 10	Science	Any

Section 1: What Task?

Teaching Task

Task Template 3 - Argumentation

After researching the 1948 Nobel Presentation Speech for the discovery of DDT and selected sections of Rachel Carson's "Silent Spring" on DDT, write an essay in which you compare the evidence about DDT's impact from the speech and the book and argue whether the pesticide discovery should have received the Nobel Prize. Support your position with evidence from your research.

Standards

Common Core State Standards for English Language Arts & Literacy in History/Social Studies, Science, and Technical Subjects

CCR.R.1

Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.

CCR.R.2

Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas.

CCR.R.4

Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone.

CCR.R.10

Read and comprehend complex literary and informational texts independently and proficiently.

CCR.W.1

Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.

CCR.W.4

Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

CCR.W.5

Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.

CCR.W.9

Draw evidence from literary or informational texts to support analysis, reflection, and research.

CCR.W.10

Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.

Program of Study Science

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Students will analyze the parts within a cell responsible for particular processes and create analogous models for those processes

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Students will compare variations, tolerances and adaptations (behavioral and physiological) of plants and animals in different biomes

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Students will investigate controversial scientific proposals (e.g., human cloning, genetic modification of crops, nuclear waste storage), use scientific evidence/data to support or defend a position and debate the ethical merits of implementing the proposed actions

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Students will explore the causes, consequences and possible solutions to persistent, contemporary and emerging global issues relating to environmental quality

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Students will analyze examples of environmental changes resulting from the introduction, removal, or reintroductions of indigenous or non-indigenous species to an ecosystem. Use information to predict future impacts of similar changes in other ecosystems

Texts

- Silent Spring
  The chapter on cancer offers evidence strong enough to justify theorizing, with a challenge of thinking through what's actually been proven.

- Silent Spring (Chapters 8, 9 and 10)
  Four excerpts describe DDT impact on specific animal species (Details under Instruction)

- Presentation Speech:The Nobel Prize in Medicine 1948
  Presentation Speech by Professor G. Fischer, member of the Staff of Professors of the Royal Caroline Institute, explained the award to Paul Müller, for the discovery of the insecticidal properties of dichloro-diphenyl-trichloromethylmethane, abbreviated as DDT." Available at http://www.nobelprize.org/nobel_prizes/medicine/laureates/1948/press.html

- Silent Spring (Chapters 1 and 3)
  Rachel Carson's clear, accessible reporting galvanized public understanding of key environmental connections. The opening “Fable for Tomorrow” provides a startling introduction to the danger, while "Elixirs of Death" offers an introduction of DDT chemistry quite different from the Nobel version.

Silent Spring Evidence Sheet

LDC Student Work Rubric - Argumentation

	Not Yet	Approaches Expectations	Meets Expectations	Advanced
	1	2	3	4
Focus	Attempts to address prompt, but lacks focus or is off-task.	Addresses prompt appropriately and establishes a position, but focus is uneven. D. Addresses additional demands superficially.	Addresses prompt appropriately and maintains a clear, steady focus. Provides a generally convincing position. D: Addresses additional demands sufficiently	Addresses all aspects of prompt appropriately with a consistently strong focus and convincing position. D: Addresses additional demands with thoroughness and makes a connection to claim.
Controlling Idea	Attempts to establish a claim, but lacks a clear purpose.	Establishes a claim.	Establishes a credible claim.	Establishes and maintains a substantive and credible claim or proposal.
Reading/Research	Attempts to reference reading materials to develop response, but lacks connections or relevance to the purpose of the prompt.	Presents information from reading materials relevant to the purpose of the prompt with minor lapses in accuracy or completeness.	Accurately presents details from reading materials relevant to the purpose of the prompt to develop argument or claim.	Accurately and effectively presents important details from reading materials to develop argument or claim.
Development	Attempts to provide details in response to the prompt, but lacks sufficient development or relevance to the purpose of the prompt.	Presents appropriate details to support and develop the focus, controlling idea, or claim, with minor lapses in the reasoning, examples, or explanations.	Presents appropriate and sufficient details to support and develop the focus, controlling idea, or claim.	Presents thorough and detailed information to effectively support and develop the focus, controlling idea, or claim.
Organization	Attempts to organize ideas, but lacks control of structure.	Uses an appropriate organizational structure for development of reasoning and logic, with minor lapses in structure and/or coherence.	Maintains an appropriate organizational structure to address specific requirements of the prompt. Structure reveals the reasoning and logic of the argument.	Maintains an organizational structure that intentionally and effectively enhances the presentation of information as required by the specific prompt. Structure enhances development of the reasoning and logic of the argument.
Conventions	Attempts to demonstrate standard English conventions, but lacks cohesion and control of grammar, usage, and mechanics. Sources are used without citation.	Demonstrates an uneven command of standard English conventions and cohesion. Uses language and tone with some inaccurate, inappropriate, or uneven features. Inconsistently cites sources.	Demonstrates a command of standard English conventions and cohesion, with few errors. Response includes language and tone appropriate to the audience, purpose, and specific requirements of the prompt. Cites sources using appropriate format with only minor errors.	Demonstrates and maintains a well-developed command of standard English conventions and cohesion, with few errors. Response includes language and tone consistently appropriate to the audience, purpose, and specific requirements of the prompt. Consistently cites sources using appropriate format.
Content Understanding	Attempts to include disciplinary content in argument, but understanding of content is weak; content is irrelevant, inappropriate, or inaccurate.	Briefly notes disciplinary content relevant to the prompt; shows basic or uneven understanding of content; minor errors in explanation.	Accurately presents disciplinary content relevant to the prompt with sufficient explanations that demonstrate understanding.	Integrates relevant and accurate disciplinary content with thorough explanations that demonstrate in-depth understanding.

Background for Students

Not provided

Extension

Not provided

Section 2: What Skills?

Close Reading Skills

FIRST INSPECTION: Ability to obtain an initial understanding of a text's purpose and organization.

CLOSE ANALYSIS: Ability to engage a text deeply on its own terms.

FOLLOWING A THOUGHT PROCESS: Ability to see how the steps in a text connect to one another.

Teaching Task Engagement

TASK ANALYSIS: Ability to understand and explain the task's prompt and rubric.

Research Reading Process

READING FOR ANSWERS: Ability to read unfamiliar texts in search of answers to specific questions.

TRACKING AN ARGUMENT: Ability to identify an author's claim and supporting evidence.

Transition to Writing

BRIDGING: Ability to begin linking reading results to writing task.

INFORMED CLOSE READING: Ability to draw new insight from a text in light of understanding from related research.

Writing Process

PLANNING > PLANNING THE WRITING: Ability to develop a line of thought and text structure appropriate to an argumentation task.

DEVELOPMENT: Ability to construct an initial draft with an emerging line of thought and structure.

ACADEMIC INTEGRITY: Ability to use and credit sources appropriately.

PROBING THE LINE OF THOUGHT: Ability to evaluate the connection between controlling idea and supporting evidence within a draft (both one's own and those created by others).

REVISION: Ability to revise and improve one's reasoning in light of review.

Section 3: What Instruction?

PACING	SKILL AND DEFINITION	PRODUCT AND PROMPT	SCORING GUIDE	INSTRUCTIONAL STRATEGIES
Close Reading Skills				
40 mins	**FIRST INSPECTION**: Ability to obtain an initial understanding of a text's purpose and organization.	**SHORT CONSTRUCTED RESPONSE** What does this document explain? What are some of the author's main points in the explanation?	• Provides an answer drawn from the text. • Marks evidence.	• Read through the presentation speech once to get the main idea. • Read through the text again to develop their answers. • Compare their answers and evidence with a partner. • Participate in a brief discussion of their first answers.
50 mins	**CLOSE ANALYSIS**: Ability to engage a text deeply on its own terms.	**LIST** Complete organizer about problems humans were able to solve, using evidence from the Nobel speech.	• Provides accurate disease list drawn from assigned text. • Identifies evidence from text for how DDT worked.	Introduce the "Evaluating Evidence" worksheet, and demonstrate completing the first row. Since typhus is mentioned so early, students to may be able to volunteer an answer even on the first round. Assign students to work through the rest of the sheet in pairs, building each other's confidence for future uses. Choose a pair to share their answers, being sure to choose a group that has gleaned some evidence. Invite other students to share additional evidence for the first pair's problems, then add problems if they found different ones. Throughout discussion, emphasize seeking evidence from specific phrases in the text and listing them in the organizer.
Not provided	**CLOSE ANALYSIS**: Ability to engage a text deeply on its own terms.	**LIST** Complete organizer about problems humans were able to solve, using evidence from the Nobel speech.	• Provides accurate disease list drawn from assigned text. • Identifies evidence from text for how DDT worked.	Introduce the "Evaluating Evidence" worksheet, and demonstrate completing the first row. Since typhus is mentioned so early, students to may be able to volunteer an answer even on the first round. Assign students to work through the rest of the sheet in pairs, building each other's confidence for future uses. Choose a pair to share their answers, being sure to choose a group that has gleaned some evidence. Invite other students to share additional evidence for the first pair's problems, then add problems if they found different ones. Throughout discussion, emphasize seeking evidence from specific phrases in the text and listing them in the organizer.
Not provided	**FOLLOWING A THOUGHT PROCESS**: Ability to see how the steps in a text connect to one another.	**SHORT CONSTRUCTED RESPONSE** Explain how your assigned paragraph relates to the ones before and after it. Put quotes around words and phrases you use from the original text.	• Uses relevant terms and ideas from the original. • Articulates a sound connection to the paragraph before and the one after.	As a whole class, identify a few connections that were hard to make in pairs, and discuss each one, giving students further models of the kinds of connections that matter. Choose another paragraph, not discussed that deeply, as the basis for the short constructed response.

PACING	SKILL AND DEFINITION	PRODUCT AND PROMPT	SCORING GUIDE	INSTRUCTIONAL STRATEGIES
Not provided	**FOLLOWING A THOUGHT PROCESS**: Ability to see how the steps in a text connect to one another.	**LIST** For each paragraph, create a summary of 10 words or less.	• Summaries address at least half the paragraphs. • Summaries show some clarity about paragraph content.	Create summaries of the first three paragraphs as a class, and discuss how first connects to second, and second to third. Assign students to create individual summaries of remaining paragraphs, with half the class starting at the beginning and the other half at the end of the speech. Have pairs of students work on describing the connections.
Teaching Task Engagement				
Not provided	**TASK ANALYSIS**: Ability to understand and explain the task's prompt and rubric.	**LIST** In your own words, what are the important features of a good response to this prompt?	Not Provided	* Share examples of type of text students will produce (either from past students or from professional writers). * Identify or invite students to identify key features of examples. * Pair students to share and improve their individual bullets. * Create a classroom list by choose one student to share a few ideas on the board and asking others to add to it.
Research Reading Process				
Not provided	**READING FOR ANSWERS**: Ability to read unfamiliar texts in search of answers to specific questions.	**OUTLINE** Use an "Evaluating Evidence" sheet to analyze Rachel Carson's claim about DDT in the " Elixirs of Death" chapter.	• Lists a defensible version of the claim. • Supports claim with three evidence entries drawn from text.	Have students read pages 20-22 of the book (from "DDT (short for dichloro-diphenyl-tricloro-ethane)" to "No one yet knows what the ultimate consequences may be.") Together, talk through possible ways to fill in the claim section of the evidence sheet, posting multiple options on the board. Assign students to choose the claim they think is best, and then complete the evidence sheet.
Not provided	**READING FOR ANSWERS**: Ability to read unfamiliar texts in search of answers to specific questions.	**OUTLINE** Use a new "Evaluating Evidence" sheet to work through your assigned section of the book.	• Individual student papers list sound answers from the texts.	Assign each student one of the four sections on specific species listed below (robins, eagles, salmon, gypsy moths) and allow 20 minutes for individual reading and notes. Have each group meet in a different corner to compare notes and create posters showing their story (15 to 20 minutes). Give each group 2 minutes to share their story, and three minutes to answer questions (20 minutes). Cloe by alerting students that you want them each to use TWO of these sections in their reports. The poster information lets them choose which other chapter to study.

PACING	SKILL AND DEFINITION	PRODUCT AND PROMPT	SCORING GUIDE	INSTRUCTIONAL STRATEGIES
Not provided	**TRACKING AN ARGUMENT**: Ability to identify an author's claim and supporting evidence.	**SHORT CONSTRUCTED RESPONSE** What is Rachel Carson's argument about leukemia and pesticides, and what is her best evidence for it?	• Quotes or paraphrases main claim. • Identifies evidence actually used.	Students read pages 226 to 238 through once on their own, then work with a partner to find the three sentences they think best describe the connection. Classroom discussion will be: • teacher asking "does Carson know that pesticides are causing leukemia?" and students showing hands. • students explaining their answers and being asked to quote a passage that supports their view. • teacher asking "so what is Carson saying about leukemia" and facilitating student discussion to paraphrase. Close with students writing a single paragraph about Carson's argument, with open book so they can review how she does the argument.
Not provided	**TRACKING AN ARGUMENT**: Ability to identify an author's claim and supporting evidence.	**SHORT CONSTRUCTED RESPONSE** "The system by which the Food and Drug Administration establishes maximum permissible limits of contamination, called 'tolerances,' has obvious defects." In your own words, restate Rachel Carson's main reasons for saying that.	• Identifies multiple reasons. • Reflects reasons shown in text.	Students skim chapter 11 (or an excerpt chosen based on knowing the group) to get the idea of what's there, then read more closely to find the arguments to support the sentence in the prompt.
Transition to Writing				
Not provided	**BRIDGING**: Ability to begin linking reading results to writing task.	**LIST** In a quick write, write about what you know now that you've read about pesticide strengths and weaknesses.	Not Provided	Give students five minutes to make their individual notes. Ask each student to share one new thought from their reading.

PACING	SKILL AND DEFINITION	PRODUCT AND PROMPT	SCORING GUIDE	INSTRUCTIONAL STRATEGIES
Not provided	**INFORMED CLOSE READING**: Ability to draw new insight from a text in light of understanding from related research.	**LIST** Brainstorm comments you might make for your assigned paragraphs of Dr. Fischer's speech, based on what you know now. Look both for ways he's right and for where he could have mentioned things that might go wrong.	• Uses information from Carson. • Responds appropriately to speech.	This is seriously modeled on "Pop-up Videos" or "Mystery Science Theatre" and you might use one or the other to illustrate the idea before showing how to do it with the speech. The idea is quick add ons of connected ideas, with a bit of snarkiness included. Fun, with an emphasis on substance. Model a few comments you might make on Fischer's paragraph that begins "Systematically" and the one after it, beginning with"In trials." Emphasize the value of having comments be just a few words. Assign each pair of students a few paragraphs within the presentation speech- ideally with two pairs preparing for each section. Give them post-it notes to attach to their copies, each with a comment. After five minutes of prep, begin final reading of the speech. Have students stand for their section, and give their comments after each paragraph is read. Then invite other students to add instant comments. Keep the pace quick, allowing 2 minutes or less per paragraph.
Writing Process				
Not provided	**PLANNING > PLANNING THE WRITING**: Ability to develop a line of thought and text structure appropriate to an argumentation task.	**OUTLINE** Create an outline based on your notes and reading in which you sequence your major points. Note your supporting evidence.	* Creates an outline or organizer. * Supports controlling idea. Uses evidence from texts read earlier.	Review teaching task before students outline. Ask students to plan multiple paragraphs, each with a big idea of something the Nobel Committee could have figured out.
Not provided	**DEVELOPMENT**: Ability to construct an initial draft with an emerging line of thought and structure.	**SHORT CONSTRUCTED RESPONSE** Write a conclusion that sums up the most important points from your paragraphs and then an introduction that draws readers into your piece.	• Introduction sets up the argument to follow. • Conclusion pulls together the major points of the preceding paragraphs and provides a succinct summary answer to the original teaching task.	Not Provided
Not provided	**DEVELOPMENT**: Ability to construct an initial draft with an emerging line of thought and structure.	**LONG CONSTRUCTED RESPONSE** Write an initial draft of the body paragraphs,insert and cite textual evidence.	* Provides paragraphs with a clear central point. * Supports each central point with multiple points of evidence.	Encourage students to re-read the teaching task partway through writing to check that they are on track.

PACING	SKILL AND DEFINITION	PRODUCT AND PROMPT	SCORING GUIDE	INSTRUCTIONAL STRATEGIES
Not provided	**ACADEMIC INTEGRITY**: Ability to use and credit sources appropriately.	**LONG CONSTRUCTED RESPONSE** Revise your article to avoid plagiarism	• Phrases and sentences originally written by Fischer and Carson are shown in quotation marks. • Pate numbers are provided to show where both quotes and facts can be found in the originals.	Not Provided
Not provided	**ACADEMIC INTEGRITY**: Ability to use and credit sources appropriately.	**SHORT CONSTRUCTED RESPONSE** Define "plagiarism" and list ways to avoid it.	• Provides accurate definition. • Lists several appropriate strategies.	• Discuss respect for others' work to assemble evidence and create texts. • Discuss academic penalties for stealing others thoughts and words.
Not provided	**PROBING THE LINE OF THOUGHT**: Ability to evaluate the connection between controlling idea and supporting evidence within a draft (both one's own and those created by others).	**NOTES** Advise a partner on how to improve his or her draft.	• Responds to substance of the draft. • Uses some language from rubric.	Hand out "Meets expectations" worksheet. Have each student read a classmate's draft and give that classmate at least two ideas of what's on track and at least two ideas of what can still be improved to "meet expectations." More notes are better, but two and two are the minimum.
Not provided	**REVISION**: Ability to revise and improve one's reasoning in light of review.	**LONG CONSTRUCTED RESPONSE** Refine composition's analysis, logic, and organization of ideas/points. Use textual evidence carefully, with accurate citations. Decide what to include and what not to include.	• Provides complete draft with all parts. • Supports the opening in the later sections with evidence and citations. • Improves earlier edition.	Share sample useful feedback that balances support for strengths and clarity about weaknesses. Assign students to provide each other with feedback on those issues.

Instructional Resources

No resources specified

Section 4: What Results?

Student Work Samples

No resources specified

Teacher Reflection

Not provided

All Attachments

Silent Spring Evidence Sheet : https://s.ldc.org/u/795zh4kk9zbxwepyqrtzov5pc